

CLAIMS

What is claimed is:

5 1. A method of shared flow control of data between a transport layer interface provider and at least one application comprising the steps of:

receiving from the at least one application a stream of data having a first aggregate downstream data rate, wherein the stream of data is made up of a plurality of streams of data;

10 measuring the first aggregate downstream data rate of the stream of data;

transmitting the stream of data to the transport layer interface provider; and

15 throttling the stream of data from the first aggregate downstream data rate to a second aggregate downstream data rate.

20 2. The method of claim 1 in which the step of measuring further comprises the step of counting with an aggregate downstream counter an amount of received data from the stream of data.

3. The method of claim 2 in which the step of counting further comprises the steps of incrementing the aggregate downstream counter by the amount of received data, and

decrementing the aggregate downstream counter by a
5 predetermined amount at a predetermined interval of time.

4. The method of claim 2 in which the step of throttling further comprises the steps of comparing the aggregate downstream counter to a predetermined downstream aggregate

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threshold, and

notifying the transport layer interface provider to throttle the plurality of streams of data.

5. The method of claim 1 in which the step of measuring further comprises the steps of identifying an individual downstream stream of data from the plurality of streams of data, and

counting from the individual downstream stream of data an individual amount of received data with an individual downstream
20 counter associated with the individual downstream stream of data.

6. The method of claim 5 in which the step of counting further comprises the steps of incrementing the individual downstream counter by the individual amount of received data, and

5 decrementing the individual downstream counter by a predetermined individual amount at a predetermined interval of time.

10 7. The method of claim 5 in which the step of measuring further comprises the step of comparing the individual downstream counter to a predetermined individual downstream threshold.

15 8. The method of claim 1 in which the step of throttling further comprises the step of executing UNIX stream functions to throttle the stream of data.

9. A method of shared flow control of data between a transport layer interface provider and at least one application comprising the steps of:

receiving from the transport layer interface provider a stream of data having a first aggregate upstream data rate, wherein the stream of data is made up of a plurality of streams of data;

measuring the first aggregate upstream data rate of the stream of data;

transmitting the stream of data to the at least one application; and

throttling the stream of data from the first aggregate upstream data rate to a second aggregate upstream data rate.

10. The method of claim 9 in which the step of measuring further comprises the step of counting with an aggregate upstream counter an amount of received data from the stream of data.

11. The method of claim 10 in which the step of counting further comprises the steps of incrementing the aggregate upstream counter by the amount of received data, and

decrementing the aggregate upstream counter by a predetermined amount at a predetermined interval of time.

12. The method of claim 10 in which the step of throttling further comprises the steps of comparing the aggregate upstream counter to a predetermined downstream aggregate threshold, and
5 notifying the transport layer interface provider to throttle the plurality of streams of data.

13. The method of claim 9 in which the step of measuring further comprises the steps of identifying an individual
10 upstream stream of data from the plurality of streams of data, and

counting from the individual upstream stream of data an individual amount of received data with an individual upstream counter associated with the individual upstream stream of data.
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14. The method of claim 13 in which the step of counting further comprises the steps of incrementing the individual upstream counter by the individual amount of received data, and
20 decrementing the individual upstream counter by a predetermined individual amount at a predetermined interval of time.

5 16. The method of claim 9 in which the step of throttling
further comprises the step of executing UNIX stream functions to
throttle the stream of data.

17. A computer-readable signal bearing medium having computer-readable program code means embodied therein for shared data flow control of data, the computer-readable program code, comprising:

5 means having computer-readable program code for receiving from the at least one application a stream of data having a first aggregate downstream data rate, wherein the stream of data is made up of a plurality of streams of data,

10 means having computer-readable program code for measuring the first aggregate downstream data rate of the stream of data,

15 means having computer-readable program code for transmitting the stream of data to the transport layer interface, and

means having computer-readable program code for throttling the stream of data from the first aggregate downstream data rate to a second aggregate downstream data rate.

20 18. The computer-readable signal-bearing medium of claim 17 further comprising means having computer-readable program code for counting with an aggregate downstream counter an amount of received data from the stream of data.

19. The computer-readable signal-bearing medium of claim
18 further comprising means having computer-readable program
code for incrementing the aggregate downstream counter by the
5 amount of received data, and

means having computer-readable program code for
decrementing the aggregate downstream counter by a predetermined
amount at a predetermined interval of time.

10 20. a computer-readable signal-bearing medium of claim 17
further comprising means having computer-readable program code
for comparing the aggregate downstream counter to a
predetermined downstream aggregate threshold, and

15 means having computer-readable program code for notifying
the transport layer interface provider to throttle the plurality
of streams of data.

21. A computer-readable signal bearing medium having computer-readable program code means embodied therein for shared data flow control of data, the computer-readable program code, comprising:

5 means having computer-readable program code for receiving from the transport layer interface a stream of data having a first aggregate upstream data rate, wherein the stream of data is made up of a plurality of streams of data,

10 means having computer-readable program code for measuring the first aggregate upstream data rate of the stream of data,

15 means having computer-readable program code for transmitting the stream of data to the at least one application, and

means having computer-readable program code for throttling the stream of data from the first aggregate upstream data rate to a second aggregate upstream data rate.

20 22. The computer-readable signal-bearing medium of claim 21 further comprising means having computer-readable program code for counting with an aggregate upstream counter an amount of received data from the stream of data.

23. The computer-readable signal-bearing medium of claim 22 further comprising means having computer-readable program code for incrementing the aggregate upstream counter by the amount of received data, and

means having computer-readable program code for decrementing the aggregate upstream counter by a predetermined amount at a predetermined interval of time.

24. a computer-readable signal-bearing medium of claim 21 further comprising means having computer-readable program code for comparing the aggregate upstream counter to a predetermined downstream aggregate threshold, and

means having computer-readable program code for notifying the transport layer interface provider to throttle the plurality of streams of data.

25. An apparatus having an aggregate stream of data at a first data rate between at least one application process and a network, comprising:

a flow control module having an aggregate counter to count the an amount of received data from the stream of data, wherein the aggregate counter is decremented by a predetermined amount at a predetermined intervals of time; and

a transport layer provider coupled to the flow control module for receiving the aggregate stream of data and modifying the first data rate of the aggregate stream of data in response to a signal from the flow control module in response the comparison of the aggregate counter to an aggregate threshold.

26. The apparatus of claim 25 in which the flow control module further comprises an individual data rate counter associated with an individual stream of data from the aggregate stream of data, wherein the individual data rate counter calculates an individual data rate for the individual stream of data, and

a comparator that compares the individual counter to a predetermined individual data rate.